## 

#### **UIC Permit VAS3G931BSMY**

Prepared for submittal to:

#### **United States Environmental Protection Agency**

Region III - Underground Injection Control Program 1650 Arch Street Philadelphia, Pennsylvania 19103-2029

Project Location:

## **Texas Brine Company Saltville, LLC Saltville High Pressure Brine Field**

864 Ader Lane Saltville, Virginia 24370-4309



Corporate Address:

#### **Texas Brine Company Saltville, LLC**

4800 San Felipe Houston, Texas 77056-3908

Prepared on: February 11, 2011

Prepared by:

United Brine Services, LLC
Mark J. Cartwright, President and Geologist
Jeff L. McCartney, Geologist and Manager of Wells
Joseph A. Vance, Civil Engineer

## **Table of Contents**

Cover Page	
Table of Contents	
Form 7520-6	3
Summary of Modification	4
Attachments	
Attachment A	5
Attachment B	7
Attachment K	12
Attachment L	13
Attachment P	17
Attachment R	18

		<b>W</b>			0	MB No. 2	2040-0042	Approva	al Expires 12/:	31/2011		
	United States Environmental Protection Agency			CEPA ID Number VAS3G931BSMY								
<b>≎EPA</b>	Und	Underground Injection Control Permit Application			[						T/A	С
<b>WEFA</b>	<b>10</b> -11-				. [		***************************************		A-11-11-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1			
	(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)					U						
		,	Read Attached In	structions Be		arting						
Application approve	ed Date receiv											
mo day ye	1	year	Permit Number			Weil ID		FINDS Number				
	II. Gener Name and	ddrass	The same of the sa			el Sign	II. Operate	Name and	i Address			
Owner Name Texas Brine Comp	on Calmilla II C			Owner N		<i>C</i>	C	. 11.0			<u> </u>	
Street Address	any sanvine, 143		Phone Number			Сотра	ny Saltville	C, 1.1.C	*************	Phone	Numbe	
864 Ader Lane			(276) 496-330		San Fe	lipc				1	877-20	
City Saltville		State VA	ZIP CODE 24370-4309	City Hous	L.ve				State TX	ZIP CC	<b>DDE</b> 6-3908	,
IV. Commercial F		. Ownership		Vi. Legel	sive of all spreadons				H. 800-0-46-	7 / / / /	()19()	
		7						**************************************				
X Yes	IX I	Private Federal		Owner   Operate	or		1479 2899					
	-	Other		- openin								
			VIII. Woll I	Status (Mari	י אין	e a de la companya d		No. of the second				10 en 11 a
× A	Date Started		X B. Modific	cation/Conve	rsion		[ ] с.	Proposed				
	mo day year	_	<b></b>				L					
Operating	)2/24/2004					and the second second second						(Newton Circ
		X. Type of P	Permit Requested	7							1000	
A. Individual	🗵 B. Area	Number o	of Existing Wells	Number o	f Propo	sed Wel			s) or project(s			
		6		7 Total			Saltvi	lle High P	ressure Brin	e frield		
			X. Class and Typ		100 / 100			9.6				
A. Class(es)	B. Type(s)		"other" or type is			20000002100.000000	. Number o	f wells per	type (if area	permit)		ga et aliri
(enter code(s))	(enter code(s))			, , , , , , , ,	,		All, 7		.,p. ( a	<b>,</b>		
111	G											
					W 100 100 100 100 100 100 100 100 100 10		STATE OF THE STATE OF	Marie Branch	enteres tax della			255016
		<del></del>	presimate Centa		Project	1	T	1	At bein			f f
Latitude Deg Min Sec	Longitude Deg Min Sec		wnship and Range		et From	Line	Feet From	n Line	Yes			
36 51 47	-81 46 06								× No			
		College Transcript	100,	NG SALES					Section 1			
(Complete the following	ng questions on a sepa	rate sheet(s)	and number acc	ordingly; see	e instru	ctions)						
	nd other classes) compl						pp 2-6) as a	appropriate	. Attach ma	ps where	)	

#### XIV. Certification

i certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibliity of fine and imprisonment. (Ref. 40 CFR 144.32)

A. Name and Title (Type or Print)	B. Phone No. (Area Code and No.)
Mark Cartwright, President of Texas Brine Company Saltville, LLC	(713) 877-2634
C. Signature	D. Date Signed 02/1///

EPA Form 7520-6 (Rev. 12-08)

#### **SUMMARY OF MODIFICATION DATED FEBRUARY 11, 2011**

Texas Brine Company Saltville, LLC (*TBCS*) owns and operates the **Saltville High Pressure Brine Field** located in the Town of Saltville in Washington County and Smyth County,

Virginia. The current permit authorizes the operation of **six (6) Class III G injection wells**through injection into the MacCrady Formation. The following wells are currently in operation:

- Well 1A
- Well 9
- Well 13A
- Well 14A
- Well 15
- Well 17

The purpose of this modification is to accomplish the following in relation to the current permit:

• Increase the total number of wells to seven (7).

Attachments A, B, K, L, P, and R are appended hereto. This communication is specifically intended to authorize the re-entry and operation of Well 131, which is currently plugged and abandoned. TBCS proposes to workover Well 131 for operation and diagonally drill to intersect with the cavern of Well 1A. TBCS proposes to manually coalesce these two wells to form Gallery 6.

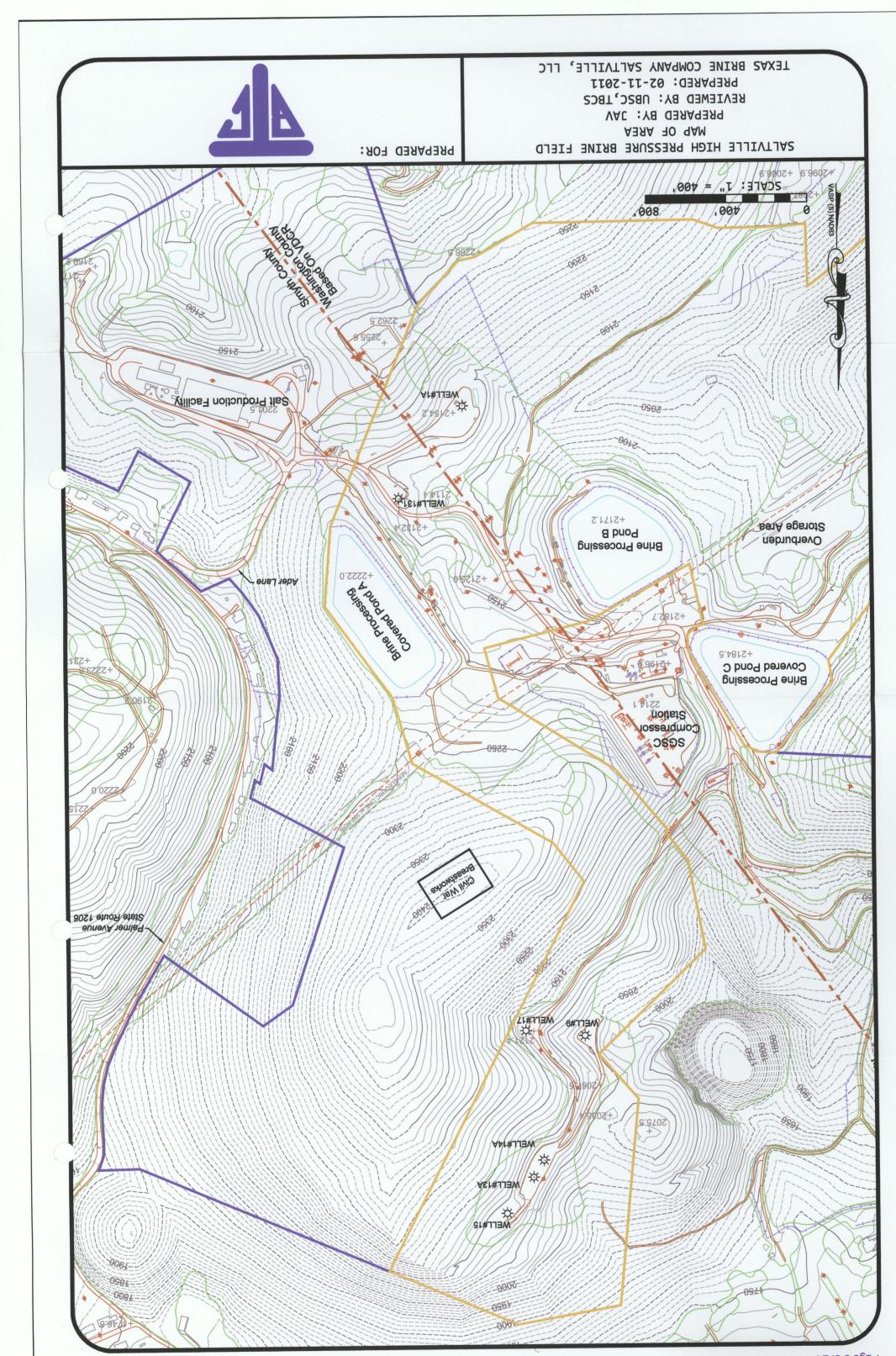
## **ATTACHMENT A - AREA OF REVIEW METHODS**

See the attached **Well Location Exhibit**. Well 131 is approximately 560 feet northeast from Well 1A. The only penetration into the Well 131 cavern development zone is Well 1A.

## ATTACHMENT B - MAPS OF WELL/AREA AND AREA OF REVIEW

See the attached **Map of Area** for all of the wells currently under permit and the additional proposed well, Well 131.

See the attached **Property Owner List** for properties located within 1/4 mile of the facility. The list is based on digital tax map records of the respective counties as of September 27, 2010.



#### **ATTACHMENT K - INJECTION PROCEDURES**

See the **Existing and Proposed Well Schematics** under Attachment L. After the hydraulic connection is established by the diagonal wellbore from Well 131 to Well 1A, TBCS proposes to inject into one well and produce from the other. Through the well manifold, the injection and return lines can be reversed. This provides flexibility and allows for even dissolution from the gallery based on injection data or survey data.

The current plan for solution mining is to utilize Well 131 as the freshwater inlet and Well 1A as the brine outlet, but can be reversed. A diagonal wellbore will be drilled from Well 131 to the cavern at the base of Well 1A. A suspended string of 4-1/2" tubing will be set just above the cavern entry point and extend to the surface. This string will serve as the water injection / brine return string, and it will also be used to retain a diesel pad which will be injected into the annular space between the borehole and the 4-1/2" tubing. As mining progresses, portions of the diesel pad will be withdrawn, opening up new sections of salt formation. This process will continue with periodic adjustments in pad elevation, until such time the cavern takes an elongated or diagonal cylinder shape, ultimately capable of richly saturated brine production. The benefit to such a process is increased retention time of the injected water, and therefore greater exposure to salt-bearing rock within the cavern. This is not unlike historical brine production techniques at Saltville, however in the case of Olin's gallery caverns, wells were intentionally washed into one another essentially producing brine production galleries. TBCS will produce a similar gallery with a diagonally drilled borehole.

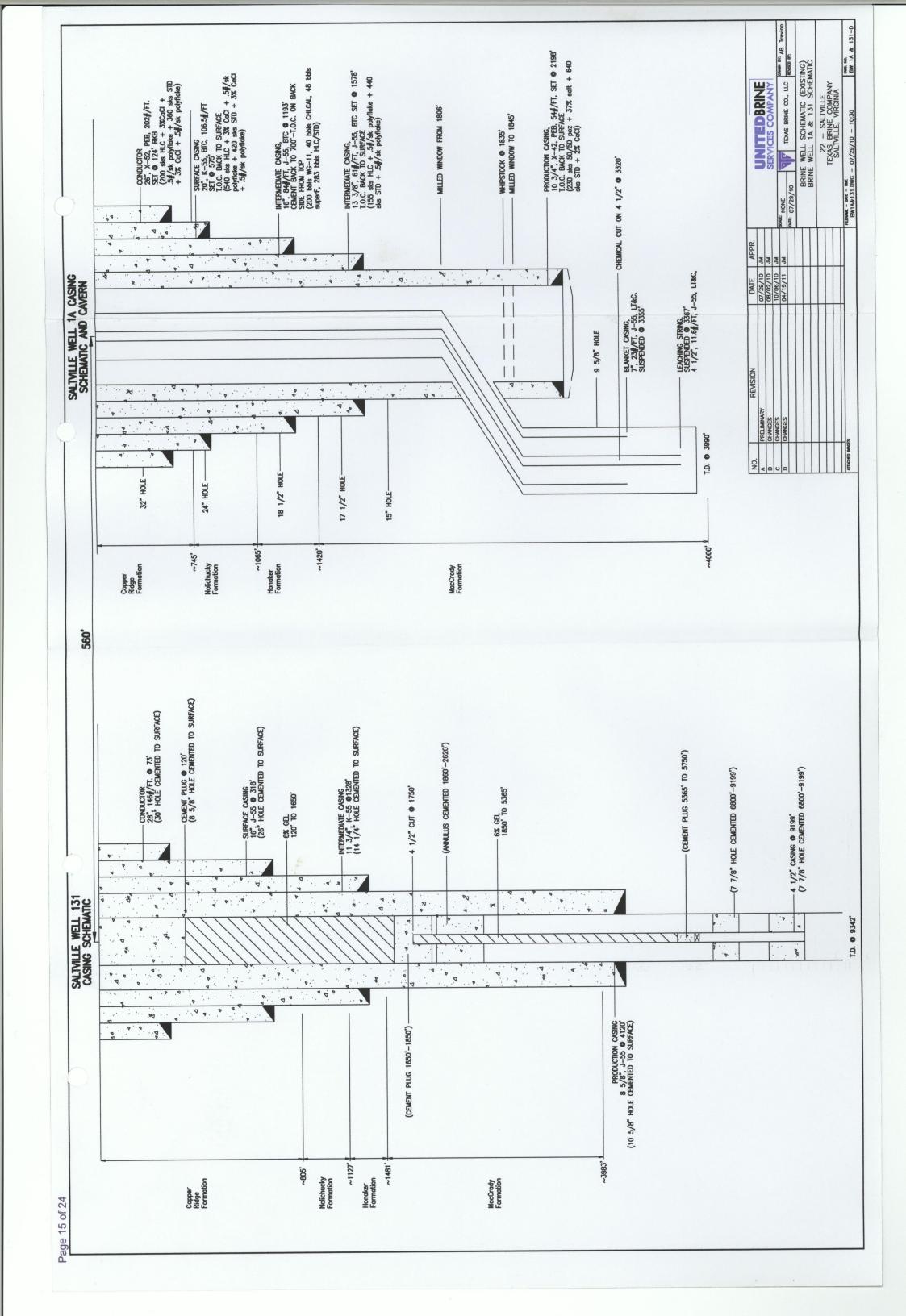
#### **ATTACHMENT L - CONSTRUCTION PROCEDURES**

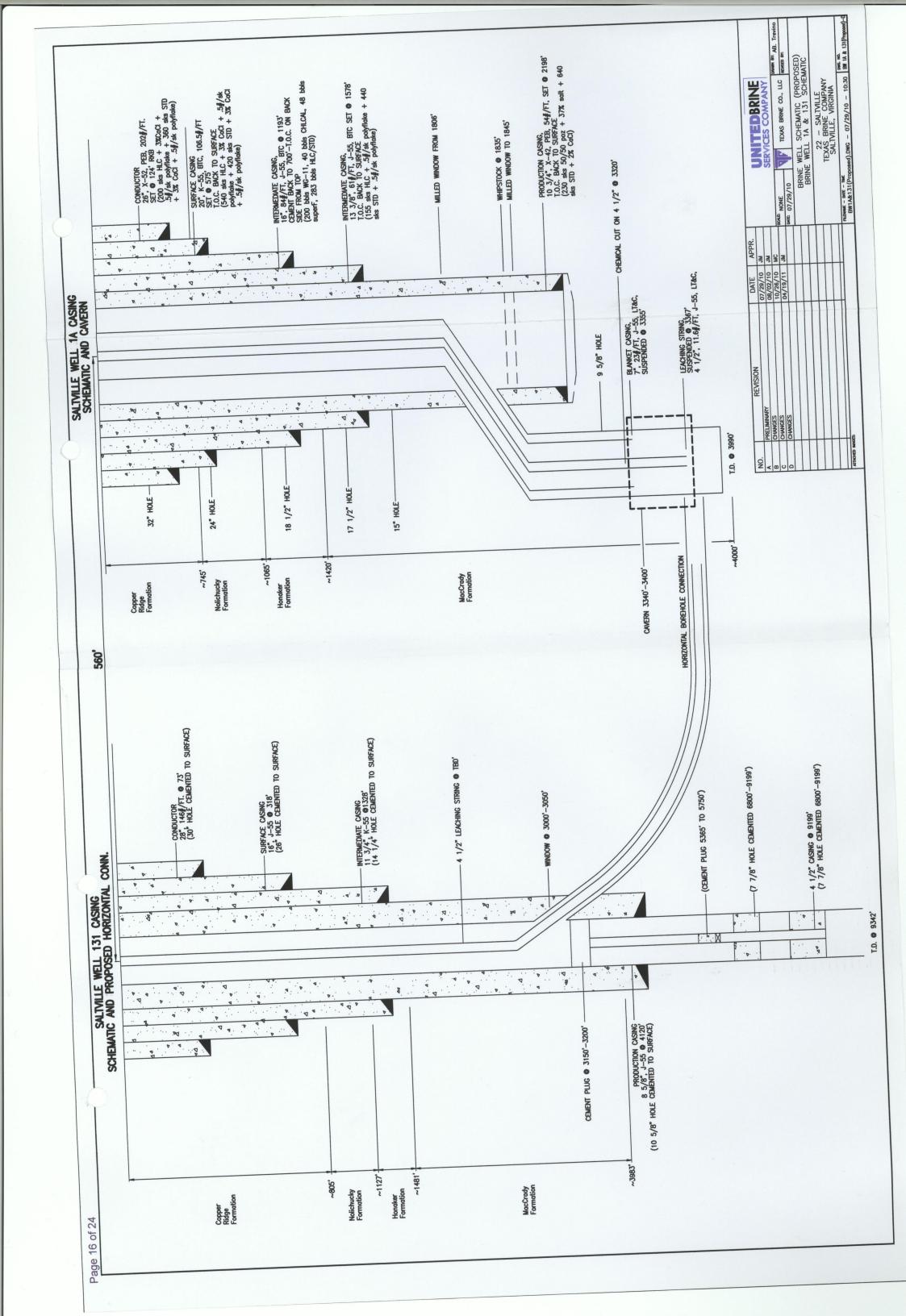
See the attached **Existing and Proposed Well Schematics**. TBSC proposes the following construction sequence. Note that the construction sequence is subject to change given field conditions and judgment.

- Locate the Well 1A cavern extents and horizontal location by a sonar survey and deviation survey.
- For Well 131, clear location, excavate and expose wellhead flange, check for pressure.
- Move in workover rig with all related equipment, shale shaker tank, and fishing tools.
- Rig up workover rig and all related equipment, install well control equipment, and measure work string.
- Hook up power swivel and start drilling cement plug inside of 8 5/8" casing. Cement expected from surface to 120' and there should be 6% gel water from 120' to 1650' which is the top of the second cement plug. After tagging up on second plug with rock bit pick up power sub and continue drilling cement down to top of 4 ½" casing at 1750'.
- Trip out of hole with rock bit and pick up wash pipe with burning shoe to clean out cement around 4 ½" casing inside of the 8 5/8" cemented casing. Drill up cement until bit falls out of cement and drops down over fish at 1750'. Make sure the 4 1/2" casing is free of cement on the outside and gel water returns to the surface. Pull out of hole and lay down wash pipe and burning shoe.
- Pick up and make up shear pin guide over the bit to drill inside of the 4 ½" casing. Pick up power swivel and drill out inside of 4 ½" casing down to 3650'. If bit falls out of cement before this depth, continue down and circulate well clean. Lay out bit and tools and prepare to cut 4 ½" casing.
- Pick up overshot, bumper jars, oil jars, drill collars, and tubing; all with full open I.D. to allow cutting tool to get through to cut casing below 3650'. Lower down over 4 ½" casing and secure a good bite on the fish. Rig up wire line truck and run in hole with split shot and find a collar below 3650' and pull a bind on 4 ½" casing with the overshot and shoot of the split shot in collar. Pull wire line tools up inside of work string and work 4 ½" casing with the rig to make sure that the 4 ½" casing is cut. Pull wire line tools out of hole and rig them down.
- Start to work fish by setting off oil jars if needed, if fish pulls free pull out of hole and lay out remainder of 4 ½" casing.
- Rig up to run Gyro on well for correlation with Well 1A cavern.

Texus Brine Company Saltville, LLC UIC Permit VAS3G931BSMY Modification · February 11, 2011

- After Gyro is complete, run a casing scraper to clean up the inside of the 4 ½" to insure that the whip stock will not get hung up.
- Rig up wire line truck and set cast iron bridge plug for a base to set the whip stock on. Set the plug pull wire line out of hole and rig down, fill hole with water and test plug and casing.
- Run and set whip stock in correlation with Well 1A location, test and release.
   Run mills to open up window in 8 5/8" casing.
- With window cut to enable passage of directional tools, start drilling with directional contractor. Once borehole drilled into close proximity of Well 1A cavern, condition mud and with mud in good shape pull out of hole with motor and all directional tools keeping the hole full at all times.
- Measure and run new 4 ½" casing from Well 131 through hole and into the salt near the Well 1A cavern.
- Perform test to insure that the cavern and wellbore are tight.
- Following successful test, wellhead lines and pump lines will be tied into well manifold and diesel will be added as a pad to allow managed growth of the borehole between Wells 131 and 1A.





#### **ATTACHMENT P - MONITORING PROGRAM**

Mechanical integrity tests will be conducted before a window is cut in Well 131, after the window is cut, and upon successful entry into the cavern at the base of Well 1A. The first two of these tests will be done by standard oilfield techniques of subjecting the borehole to a hydrostatic pressure test. The final test will consist of a water-brine interface test. All mechanical integrity tests will be performed in accordance with EPA standards.

#### **ATTACHMENT R - NECESSARY RESOURCES**

A copy of the revised **Bond** is attached. According to the abandonment specifications, TBCS estimates that each wellbore will require \$50,000 to plug and abandon. TBCS has updated the bond to \$350,000 to reflect the proposed revisions.

#### BOND RIDER NO. 1

Attaching to and forming part of Surety Performance Bond, Bond No. RLB0010725 effective August 28, 2007 on behalf of Texas Brine Company Saltville, LLC as Principal, in favor of U.S. Environmental Protection Agency as Obligee, in the amount of Ninety Thousand and No/100 Dollars (\$90,000.00).

It is understood and agreed that effective October 27, 2010 the above has been increased by Two Hundred Sixty Thousand and No/100 Dollars (\$260,000.00).

Total penal sum is now amended to read, Three Hundred Fifty Thousand and No/100 Dollars (\$350,000.00).

The current description of the wells under the permit that will be covered by this bond are as follows:

UIC Permit No. VAS3G931BSMY...... 7 wells @\$50K per well

Well 1A, Well 9, Well 13A, Well 14A, Well 15, Well 17, Well 131

All other conditions and terms to remain as originally written.

Signed, sealed and dated this 27<sup>th</sup> day of October 2010

Texas Brine Company Saltville, LLC

Principal

By.

RLI Insurance Company

Surety

Greg E. Chilson, Attorney-in-Fact



RLI Surety A division of RLI Insurance Company

#### RLB0010725

#### **POWER OF ATTORNEY**

RLI Insurance Company

#### Know All Men by These Presents:

That the RLI INSURANCE COMPANY, a corporation	organized and existing under the laws of the S	State of Illinois, and authorized and licensed
to do business in all states and the District of Col	lumbia does hereby make, constitute and appoin	nt: GREG E. CHILSON
in the City of <u>HOUSTON</u> , State of <u>TEXAS</u>	_ , as Attorney-in-Fact, with full power and au	thority hereby conferred upon him to sign,
execute, acknowledge and deliver for and on its be	ehalf as Surety and as its act and deed, all of t	he following classes of documents to-wit:
\$	350,000.00	
Indemnity, Surety and Undertakings that may be or equity; policies indemnifying employers again surety and fidelity bonds. Indemnity in all cases execute consents and waivers to modify or chang and settle any and all claims or demands made or	nst loss or damage caused by the misconduct o where indemnity may be lawfully given; and v ge or extend any bond or document executed fo	f their employees; official, bail and vith full power and authority to
The RLI INSURANCE COMPANY further certifies th Directors of RLI Insurance Company, and now in fo		Resolution adopted by the Board of
"All bonds, policies, undertakings, Powers of Att name of the Company by the President, Secretar as the Board of Directors may authorize. The Preappoint Attorneys-in-Fact or Agents who shall have corporate seal is not necessary for the validatine corporation. The signature of any such office (Blue)	ry, any Assistant Secretary, Treasurer, or any V esident, any Vice President, Secretary, any Ass ave authority to issue bonds, policies, or unde ity of any bonds, policies, undertakings, Power	Tice President, or by such other officers istant Secretary, or the Treasurer may rtakings in the name of the Company.  res-of-Attorney, or other obligations of
ATTEST:  CORPORATE SECRETARY  tate of Illinois  Security of Peoria  N WITNESS WHEREOF, the RLI Insurance Compactory  ATTEST:  CORPORATE SECRETARY  SS	SEAL	PRESIDENT with its  RLI INSURANCE COMPANY  PRESIDENT

On this 27 day of Oct. 2010 before me, a Notary Public, personally appeared Michael J. Stone and Jean M. Stephenson, who being by me duly sworn, acknowledged that they signed the above Power of Attorney as President and Corporate Secretary, respectively, of the said RLI INSURANCE COMPANY, and acknowledged said instrument to be the voluntary act and deed of said corporation.

Cherie L'Montgomery



#### SURETY PERFORMANCE BOND

# U.S. ENVIRONMENTAL PROTECTION AGENCY UNDERGROUND INJECTION CONTROL FINANCIAL RESPONSIBILITY REQUIREMENT

#### BOND COVERS THE PLUGGING OF INJECTION WELLS

Date Bond Executed:	August 28, 2007
Effective Date:	August 28, 2007
Principal:	Texas Brine Company Saltville, LLC (Legal Name of Owner or Operator)
	4800 San Felipe, Houston, TX 77056  (Business Address of Owner or Operator)
Type of Organization:	Limited Liability Company
State of Incorporation:	(Individual, joint venture, partnership, or corporation)  Texas
Surety(ies):	RLI Insurance Company
	(Name) 8 Greenway Plaza, Suite 400, Houston, TX 77046
	(Business Address)

EPA identification number, name, address, and plugging and abandonment amount(s) for each injection well guaranteed by this Bond. (Indicate plugging and abandonment amounts for each well. Attach separate list if necessary.

Injection Well Information

Plugging And Abandonment Amount

UIC Permit # VAS3G931BSMY 14-a, 13-b, & 4 wells to be developed \$90,000.00

Total Penal Sum of Bond:

\$90,000.00

#### **KNOW ALL PERSONS BY THESE PRESENTS:**

THAT we, the Principal and the Surety(ies) hereto are firmly bound to the U.S. Environmental Protection Agency (hereinafter called "EPA"), in the above penal sum for the payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns jointly and severally; provided that, where the Surety(ies) are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" only for the purpose of allowing a joint action or actions against any or all of us and for all other

COPY

purposes each Surety binds itself jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety, but if no limit of liability is indicated, the limit of liability shall be the full amount of the penal sum.

WHEREAS, the Principal is required, under the Underground Injection Control Regulations, as amended, to have a permit or comply with provisions to operate under rule for each injection well identified above, and

the Principal is required to provide financial assurance for plugging and abandonment as a condition of the permit or approval to operate under rule, and

WHEREAS, said Principal shall establish a standby trust fund as is required when a surety bond is used to provide such financial assurance;

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION ARE SUCH that if the Principal shall faithfully perform plugging and abandonment, whenever required to do so, of each injection well for which this Bond guarantees plugging and abandonment, in accordance with the plugging and abandonment plan and other requirements of the permit or provisions for operating under rule and other requirements of the permit or provisions for operating under rule as may be amended, pursuant to all applicable laws, statutes rules and regulations, as such laws, statutes, rules, and regulations may be amended.

Or, if the Principal shall provide alternate financial assurance and obtain the EPA Regional Administrator's written approval of such assurance, within ninety (90) days after the date of notice of cancellation is received by both the Principal and the EPA Regional Administrator(s) from the Surety(ies), then this obligation shall be null and void. Otherwise it is to remain in full force and effect.

The Surety(ies) shall become liable on this Bond obligation only when the Principal has failed to fulfill the conditions described above.

Upon notification by the EPA Regional Administrator that the Principal has been found in violation of the plugging and abandonment requirements of the 40 CFR Part 144, for an injection well which this Bond guarantees performances of plugging and abandonment, the Surety(ies) shall either perform plugging and abandonment in accordance with the plugging and abandonment plan and other permit requirements or provisions for operating under rule and other requirements or place the amount for plugging and abandonment into a standby trust fund as directed by the EPA Regional Administrator.

Upon notification by an EPA Regional Administrator that the Principal has failed to provide alternate financial assurance and obtain written approval of such assurance from the EPA Regional Administrator(s) during the ninety (90) days following receipt by both the Principal and EPA Regional Administrator(s) of a notice of cancellation of the bond, the Surety(ies) shall place funds in the amount guranteed for the injection well(s) into the standby trust fund as directed by the EPA Regional Administrator.

The Surety(ies) hereby waives notification of amendments to plugging and abandonment plans, permits, applicable laws, statutes, rules and regulations and agrees that no such amendment shall in any way alleviate its (their) obligation on this Bond.

The liabilities of the Surety(ies) shall not be discharged by any payment or succession of payments hereunder, unless and until such payment or payments shall amount in the aggregate to the penal sum of the Bond, but in no event shall the obligation of the Surety(ies) hereunder exceed the amount of said penal sum.

The Surety(ies) may cancel the Bond by sending notice by certified mail to the owner or operator and to the EPA Regional Administrator(s) for the Region(s) in which the injection well(s) is (are) located, provided, however, that cancellation shall not occur during the 120 days beginning on the date of receipt of the notice of cancellation by both the Principal and the EPA Regional Administrator(s), as evidenced by the return receipts.

The Principal may terminate this Bond by sending written notice to the Surety(ies); provided, however, that no such notice shall become effective until the Surety(ies) receive(s) written authorization for termination of the Bond by the EPA Region(s) in which the bonded injection well(s) is (are) located.

**IN WITNESS WHEREOF**, the Principal and the Surety(ies) have executed this Performance Bond and have affixed their seal on the date set forth above.

The persons whose signatures appear below hereby certify that they are authorized to execute this Surety Bond on behalf of the Principal and the Surety(ies) on the date this Bond was executed.

Texas Brine Company Saltville, LLC	RLI Insurance Company		
4800 San Felipe	8 Greenway Plaza, Suite 400		
Houston, TX 77056	Houston, TX 77046		
Principal Name(Name/Address)	Surety (Name/Address)		
By:	By: Relon. Osc.		
(Signature)	(Signature)		
MINUL CONTRICTUL PRESIDENT (Printed Name/Title)	Paul M. O'Sullivan, Attorney-in-Fact		
Corporate Seal	Corporate Seal		
Texas State of Incorporation	Illinois State of Incorporation		
\$ Bond Premium	\$ 90,000.00		
Dona Fremium	Liability Limit		

(For every Co-Surety, provide signature(s), corporate seal, and other information in the same manner as for Surety above.)



RLI Surety | A Division of RLI Insurance Company

9025 North Lindbergh Dr. • Peoria, IL 61615 (309) 692-1000 or (800) 645-2402

#### RLB0010725

### POWER OF ATTORNEY

**RLI Insurance Company** 

#### Know All Men by These Presents:

That the RLI INSURANCE COMPANY, a corporation organized and existing under the laws of the State of Illinois, and authorized and license
to do business in all states and the District of Columbia does hereby make, constitute and appoint: PAUL M. O'SULLIVAN
in the City of <u>HOUSTON</u> , State of <u>TEXAS</u> , as Attorney-in-Fact, with full power and authority hereby conferred upon him to sign execute, acknowledge and deliver for and on its behalf as Surety and as its act and deed, all of the following classes of documents to-wit
\$90,000.00
Indemnity, Surety and Undertakings that may be desired by contract, or may be given in any action or proceeding in any court of law or equity; policies indemnifying employers against loss or damage caused by the misconduct of their employees, official, bail and surety and fidelity bonds. Indemnity in all cases where indemnity may be lawfully given; and with full power and authority to execute consents and waivers to modify or change or extend any bond or document executed for this Company, and to compromise and settle any and all claims or demands made or existing against said Company.
The RLI INSURANCE COMPANY further certifies that the following is a true and exact copy of a Resolution adopted by the Board of Directors of RLI Insurance Company, and now in force to-wit:
"All bonds, policies, undertakings, Powers of Attorney, or other obligations of the corporation shall be executed in the corporate name of the Company by the President, Secretary, any Assistant Secretary, Treasurer, or any Vice President, or by such other officers as the Board of Directors may authorize. The President, any Vice President, Secretary, any Assistant Secretary, or the Treasurer may appoint Attorneys in Fact or Agents who shall have authority to issue bonds, policies, or undertakings in the name of the Company. The corporate seal is not necessary for the validity of any bonds, policies, undertakings, Powers of Attorney, or other obligations of the corporation. The signature of any such officer and the corporate seal may be printed by facsimile."
(Blue shaded areas above indicate authenticity)
IN WITNESS WHEREOF, the RLI Insurance Company has caused these presents to be executed by its
On this 28 day of Aug. 2007 before me, a Notary Public, personally appeared Michael J. Stone and Jean M. Stephenson, who being by me duly sworn acknowledged that they signed the above Power of Attorney as President and Corporate Secretary, respectively, of the said RLINSURANCE.

COMPANY, and acknowledged said instrument to be the voluntary act and deed of said corporation.

Notary Public



